

# Preparing for the GOES-R by using GOES-14 1-min imagery

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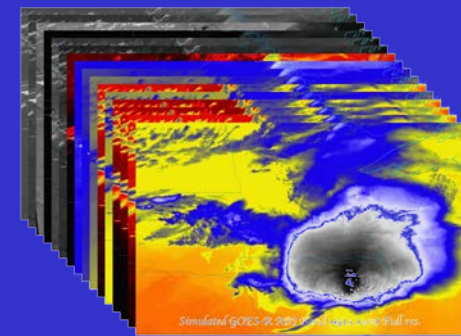
NOAA/NESDIS/Satellite Applications and Research

Advanced Satellite Products Branch (ASPB)

Madison, WI

Steve Goodman, Mat Gunshor, Dan Lindsey, Bob Rabin, Scott Lindstrom,

Scott Bachmeier, and Chris Velden



*MUG Meeting  
Madison, WI  
September 9-10, 2013*



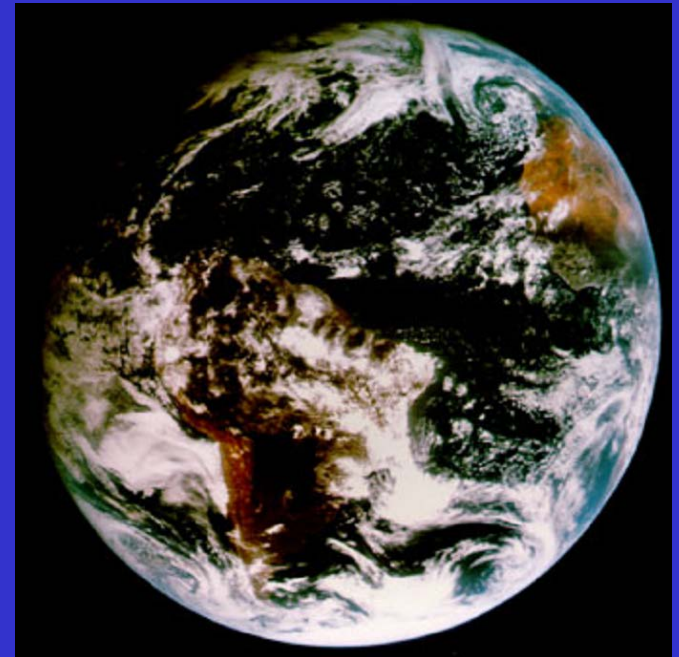
# Thanks to...

- Justin Sieglaff and John Cintineo
- Kevin Ludlum, GOES operators, GOES shift supervisors, etc.
- Dave Radell, Frank Alsheimer, Andy Edman, Joleen Feltz, William Straka, Jun Li, Steve Ackerman, Bob Aune, Paul Menzel, Tony Schreiner, Jim Jung, Elaine Prins, Brad Pierce, Wayne Feltz, Jean Phillips, Gary Wade, Don Hillger, Jinlong Li, Jing Zheng, Allen Huang, the SSEC Data Center, Mike Pavolonis, Michael Folmer, Jaime Daniels, ASPB, STAR, NESDIS, NSSL, MUG, Mark DeMaria, and many others!
- GOES-R Program Office, NASA, ITT Industries, other industry partners, etc.
- You.



# Outline

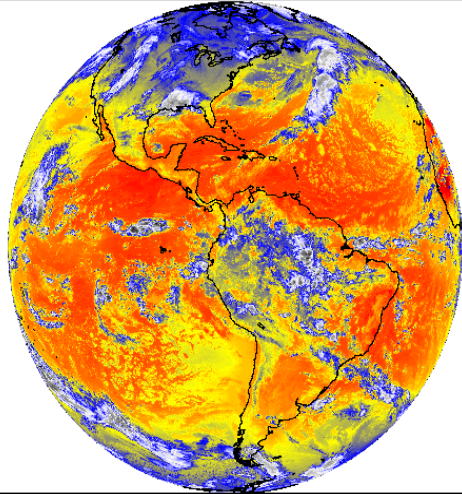
- ABI (Advanced Baseline Imager)
  - Spectral
  - Spatial
  - Temporal
  
- Summary
  - More information
  - Questions



# GOES-R main instruments

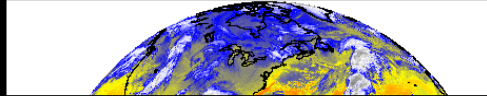
## ABI – Advanced Baseline Imager

28 MAR 01 IMAGE START TIME 11:45 UTC



ABI COVERAGE IN 5 MINUTES

28 MAR 01 IMAGE START TIME 11:45 UTC

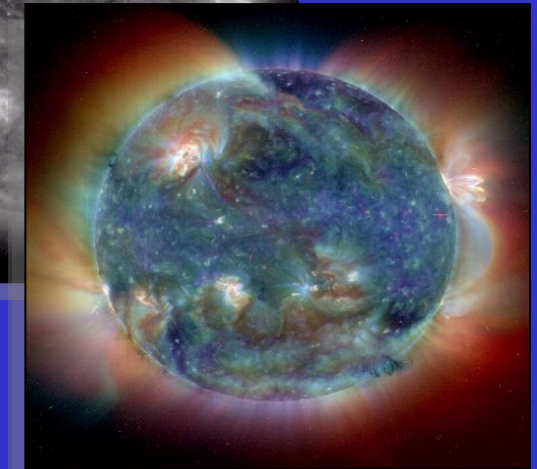
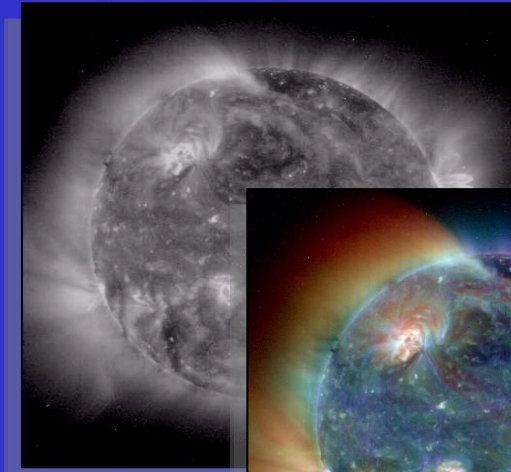


ABI covers the earth approximately five times faster than the current Imager.

GOES-8 COVERAGE IN 5 MINUTES

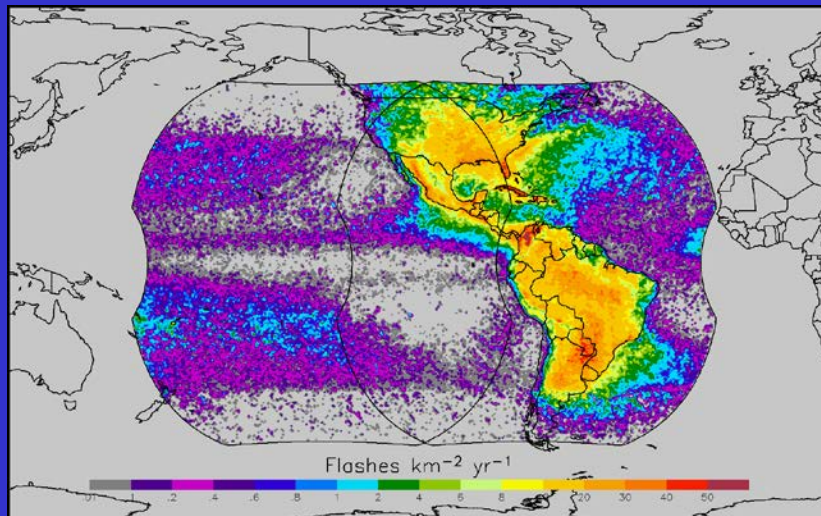
ORA/ASPT

## Space Weather/Solar



Images courtesy of SOHO EIT, a joint NASA/ESA program

## Geostationary Lightning Mapper





# GOES-R Overview

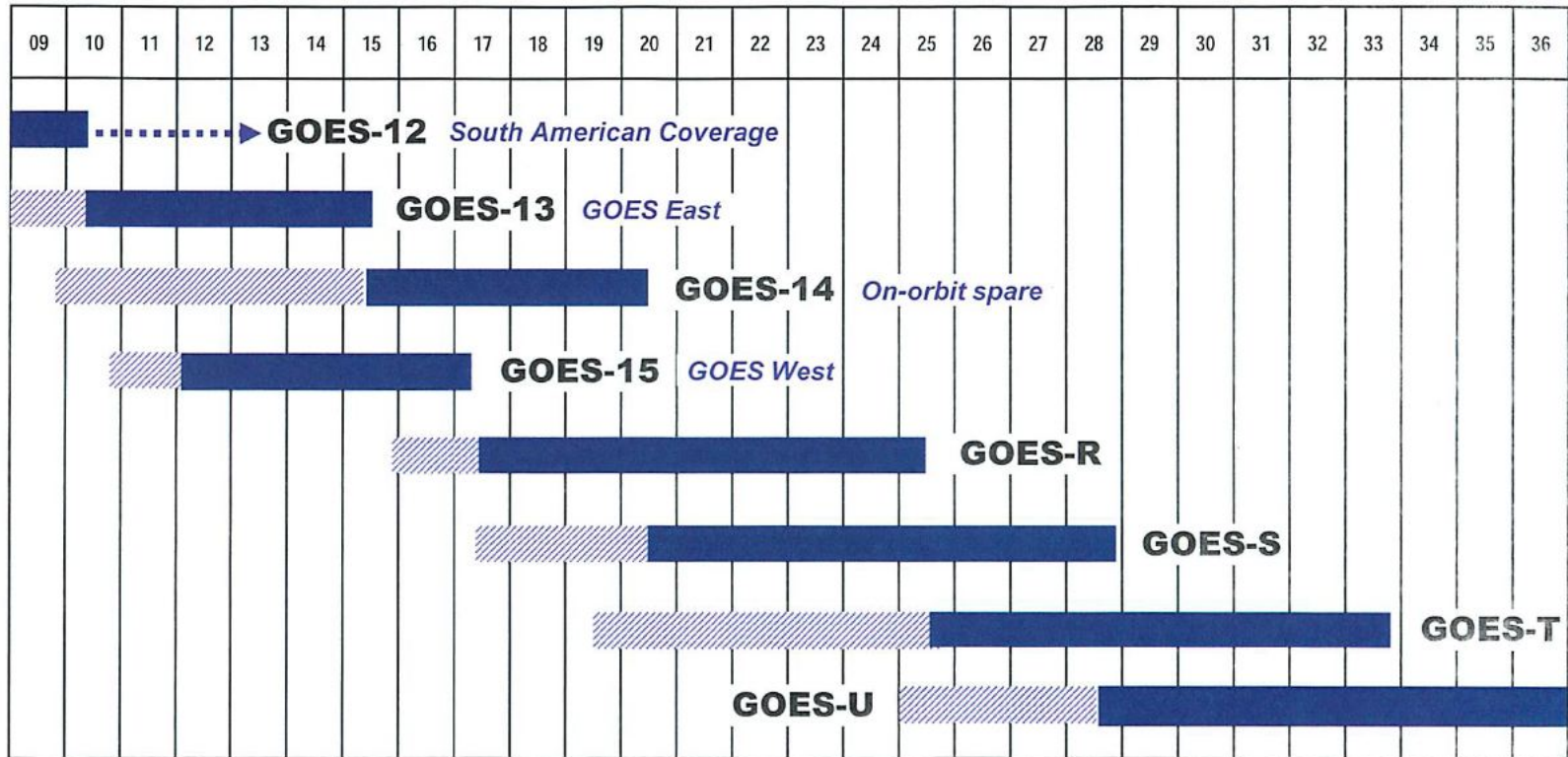
- Advanced Baseline Imager (ABI)
  - No dedicated Sounder
- Geostationary Lightning Mapper (GLM)
- Space Weather
  - Space Environmental In-Situ Suite (SEISS)
  - Solar Ultra Violet Imager (SUVI)
  - Extreme Ultra Violet/X-Ray Irradiance Sensor (EXIS)
  - Magnetometer
- Communications
  - GOES Rebroadcast (GRB)
  - Low Rate Information Transmissions (LRIT)
  - Emergency Managers Weather Information Network (EMWIN)
  - Search and Rescue (SAR)
  - Data Collection System (DCS)

# GOES Fly-out Schedule

## Continuity of GOES Mission

Fiscal Year

As of April 2013



Key



Satellite is operational beyond design life



On-orbit GOES storage



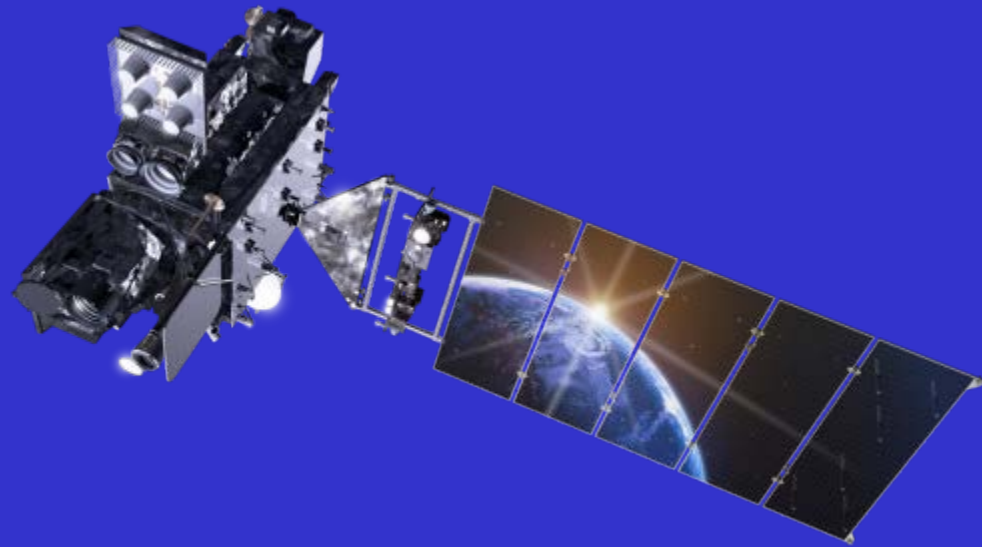
Operational

Approved:

Assistant Administrator for Satellite and Information Services

# Outline

- ABI (Advanced Baseline Imager)
  - Spectral
  - Spatial
  - Temporal
- Summary
  - More information
  - Questions



# The Advanced Baseline Imager:

	<b>ABI</b>	<b>Current</b>
<b>Spectral Coverage</b>		
	16 bands	5 bands
<b>Spatial resolution</b>		
0.64 $\mu\text{m}$ Visible	0.5 km	Approx. 1 km
Other Visible/near-IR	1.0 km	n/a
Bands ( $>2 \mu\text{m}$ )	2 km	Approx. 4 km
<b>Spatial coverage</b>		
Full disk	4 per hour	Scheduled (3 hrly)
CONUS	12 per hour	~4 per hour
Mesoscale	Every 30 sec	n/a
<b>Visible (reflective bands)</b>		
On-orbit calibration	Yes	No



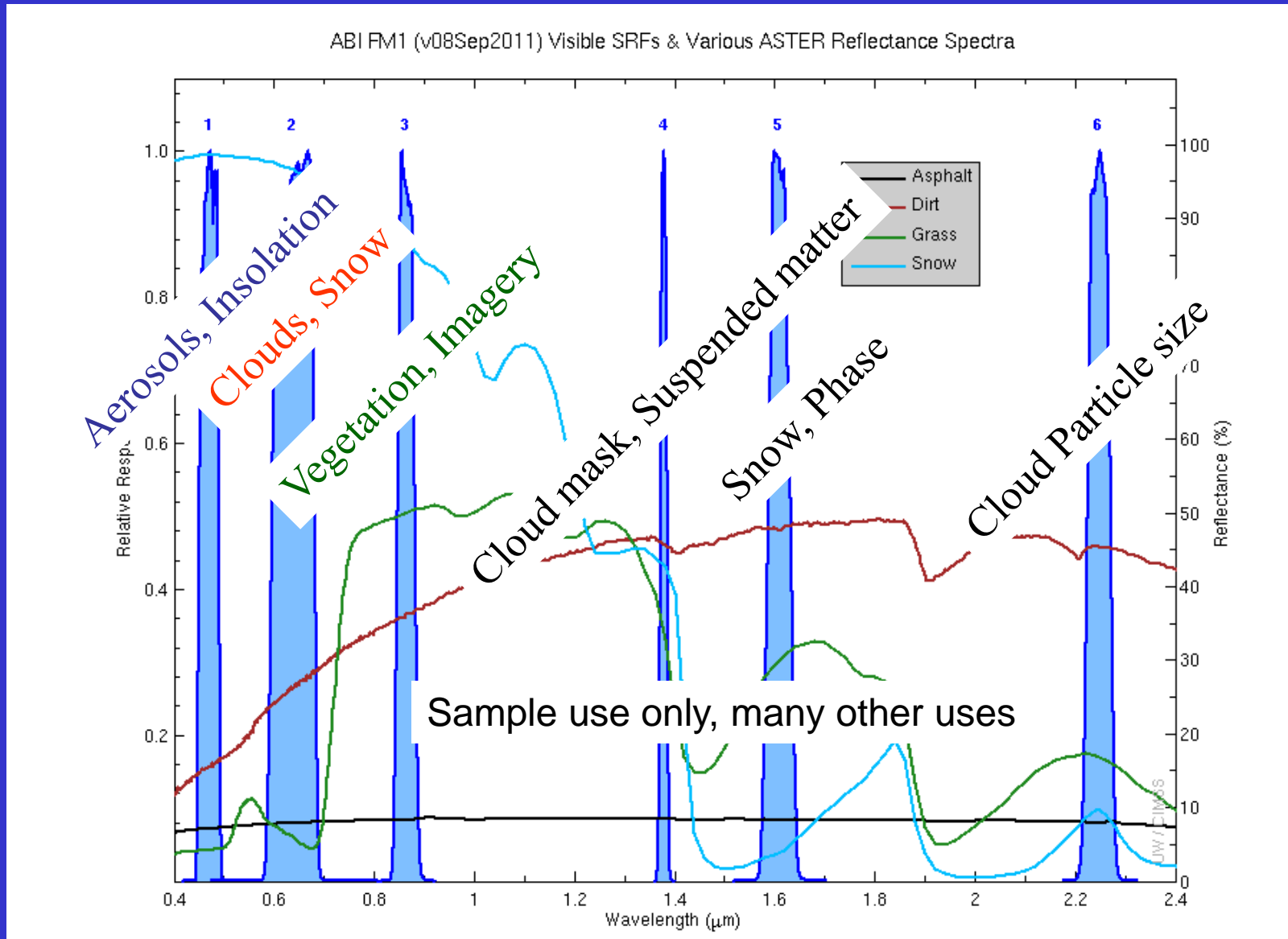
# ABI Visible/Near-IR Bands

Future GOES imager (ABI) band	Wavelength range ( $\mu\text{m}$ )	Central wavelength ( $\mu\text{m}$ )	Nominal subsatellite IGFOV (km)	Sample use
1	0.45–0.49	0.47	1	Daytime aerosol over land, coastal water mapping
2	0.59–0.69	0.64	0.5	Daytime clouds fog, insolation, winds
3	0.846–0.885	0.865	1	Daytime vegetation/burn scar and aerosol over water, winds
4	1.371–1.386	1.378	2	Daytime cirrus cloud
5	1.58–1.64	1.61	1	Daytime cloud-top phase and particle size, snow
6	2.225–2.275	2.25	2	Daytime land/cloud properties, particle size, vegetation, snow

# ABI IR Bands

7	3.80–4.00	3.90	2	Surface and cloud, fog at night, fire, winds
8	5.77–6.6	6.19	2	High-level atmospheric water vapor, winds, rainfall
9	6.75–7.15	6.95	2	Midlevel atmospheric water vapor, winds, rainfall
10	7.24–7.44	7.34	2	Lower-level water vapor, winds, and SO <sub>2</sub>
11	8.3–8.7	8.5	2	Total water for stability, cloud phase, dust, SO <sub>2</sub> rainfall
12	9.42–9.8	9.61	2	Total ozone, turbulence, and winds
13	10.1–10.6	10.35	2	Surface and cloud
14	10.8–11.6	11.2	2	Imagery, SST, clouds, rainfall
15	11.8–12.8	12.3	2	Total water, ash, and SST
16	13.0–13.6	13.3	2	Air temperature, cloud heights and amounts

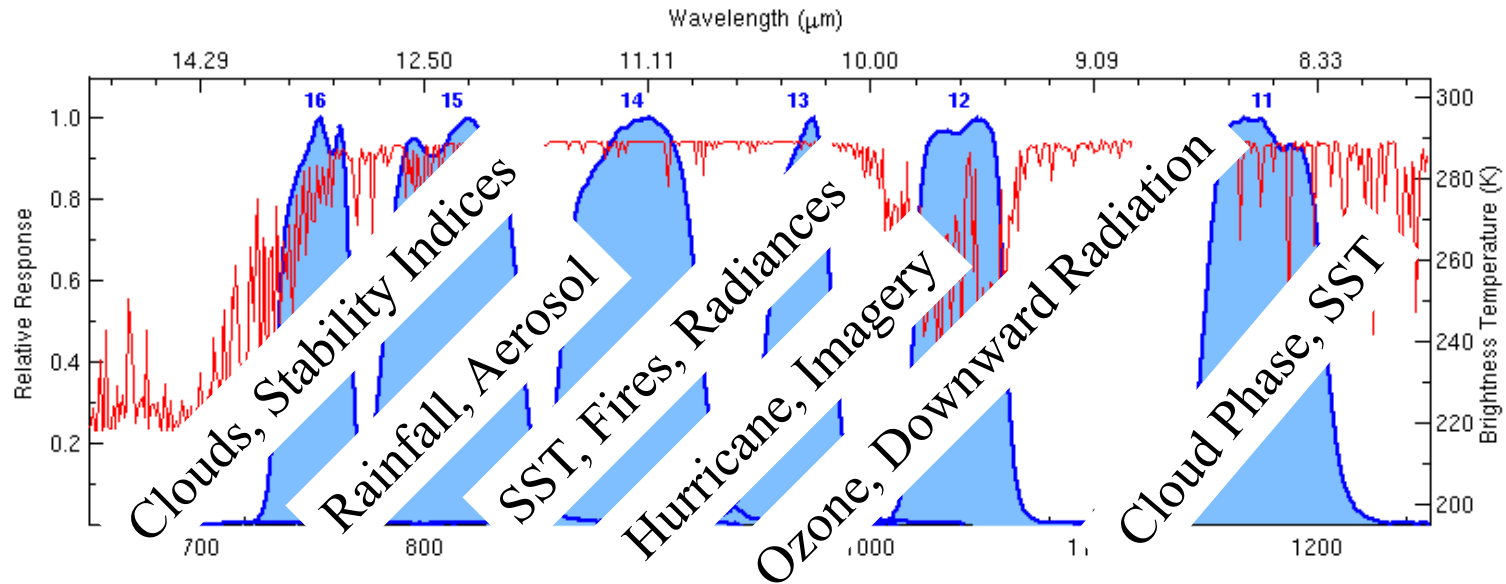
# Visible and near-IR channels on the ABI



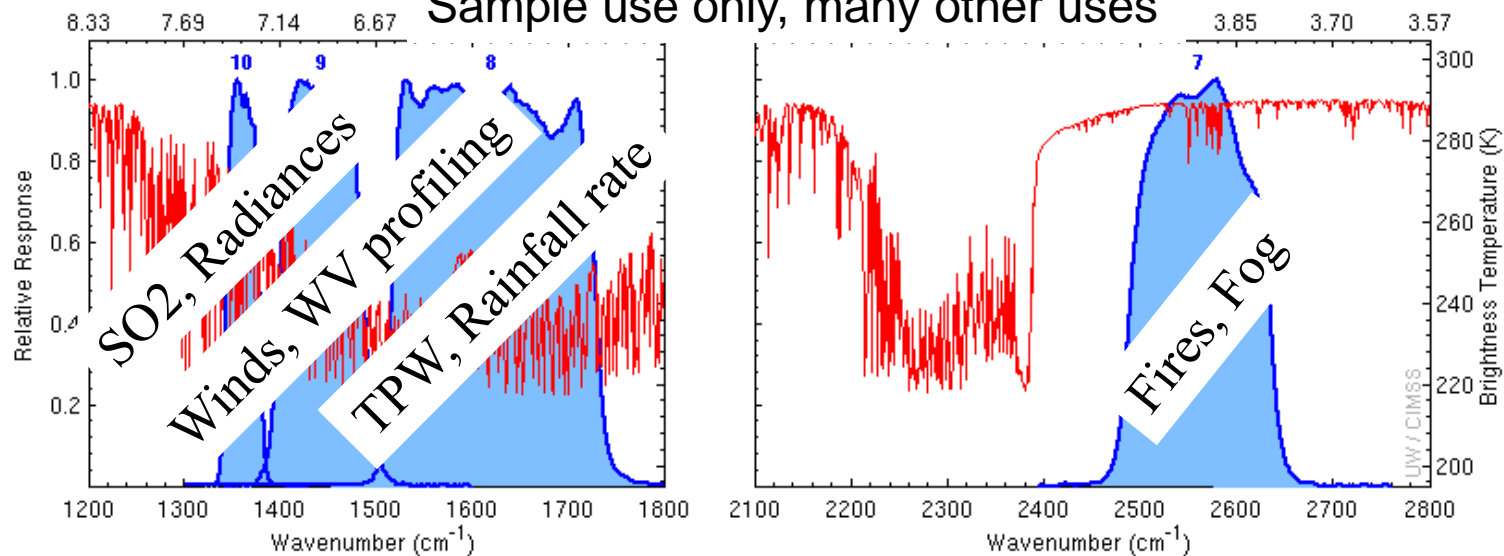
The ABI visible and near-IR bands have many uses.

# The IR channels on the ABI

ABI FM1 (v08Sep2011) SRFs & US Std Atms Brightness Temperature Spectrum



Sample use only, many other uses



ABI has many more bands than the current operational GOES imagers.



ALL ABI CHANNELS

22:00 UTC

4 JUN 05 2005155

NOAA UW-CIMSS

0.64  $\mu\text{m}$

VISIBLE B1 0.47  $\mu\text{m}$

VISIBLE B2 0.64  $\mu\text{m}$

NEARIR B3 0.87  $\mu\text{m}$

NEARIR B4 1.4  $\mu\text{m}$

3.9  $\mu\text{m}$

NEARIR B5 1.6  $\mu\text{m}$

NEARIR B6 2.3  $\mu\text{m}$

IR B7 3.9  $\mu\text{m}$

IR B8 6.2  $\mu\text{m}$

6.95  $\mu\text{m}$

IR B9 7.0  $\mu\text{m}$

IR B10 7.3  $\mu\text{m}$

IR B11 8.5  $\mu\text{m}$

IR B12 9.6  $\mu\text{m}$

11.2  $\mu\text{m}$

IR B13 10.4  $\mu\text{m}$

IR B14 11.2  $\mu\text{m}$

IR B15 12.3  $\mu\text{m}$

IR B16 13.3  $\mu\text{m}$

13.3  $\mu\text{m}$



# ABI band selection

ALL ABI CHANNELS

22:00 UTC

4 JUN 05 2005155

NOAA UW-CIMSS

0.47  $\mu\text{m}$

0.64  $\mu\text{m}$

0.86  $\mu\text{m}$

1.38  $\mu\text{m}$

VISIBLE B1 0.47 UM

VISIBLE B2 0.64 UM

NEARIR B3 0.87 UM

NEARIR B4 1.4 UM

1.61  $\mu\text{m}$

2.26  $\mu\text{m}$

3.9  $\mu\text{m}$

6.19  $\mu\text{m}$

NEARIR B5 1.6 UM

NEARIR B6 2.3 UM

IR B7 3.9 UM

IR B8 6.2 UM

6.95  $\mu\text{m}$

7.34  $\mu\text{m}$

8.5  $\mu\text{m}$

9.61  $\mu\text{m}$

IR B9 7.0 UM

IR B10 7.3 UM

IR B11 8.5 UM

IR B12 9.6 UM

10.35  $\mu\text{m}$

11.2  $\mu\text{m}$

12.3  $\mu\text{m}$

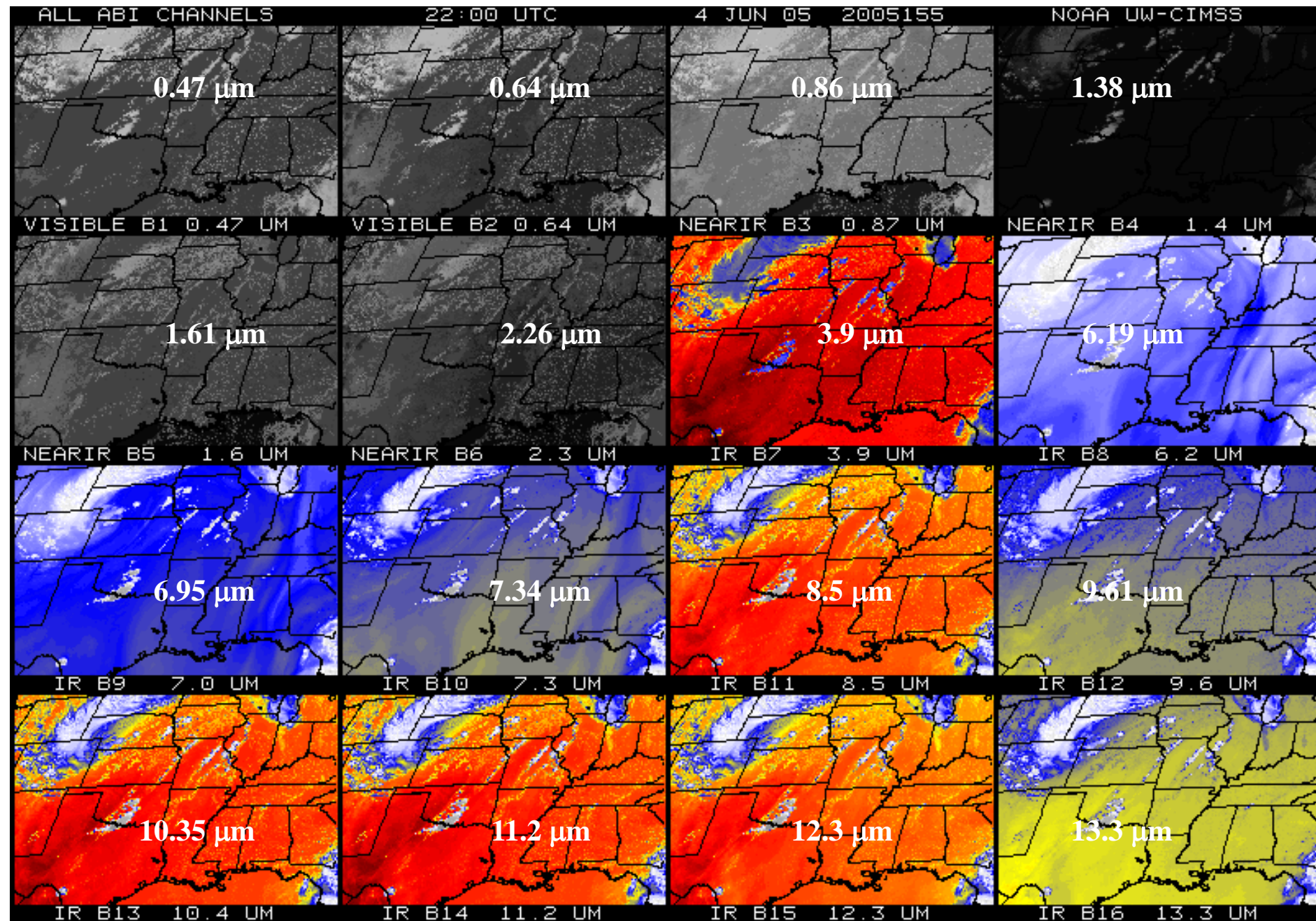
13.3  $\mu\text{m}$

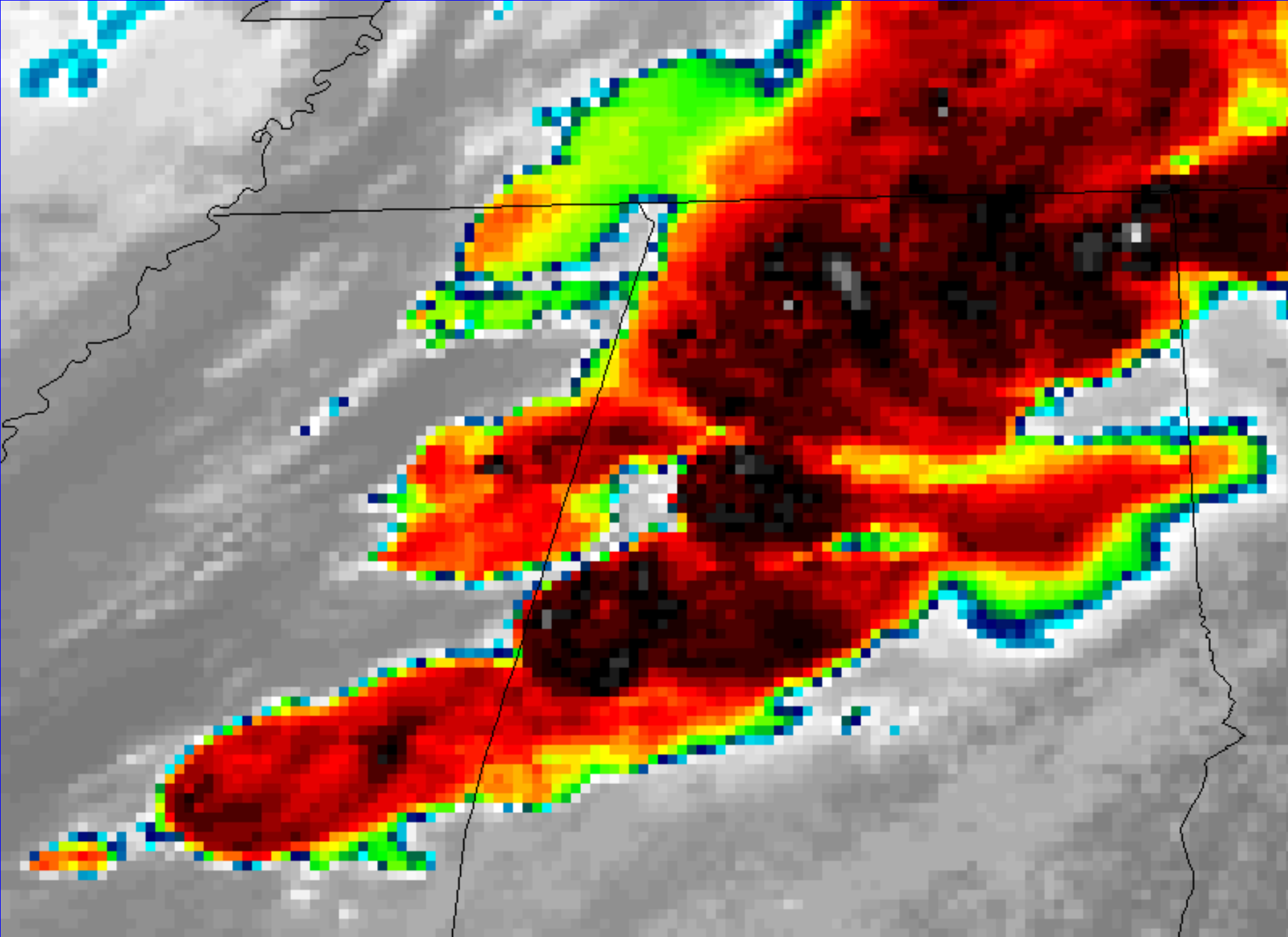
IR B13 10.4 UM

IR B14 11.2 UM

IR B15 12.3 UM

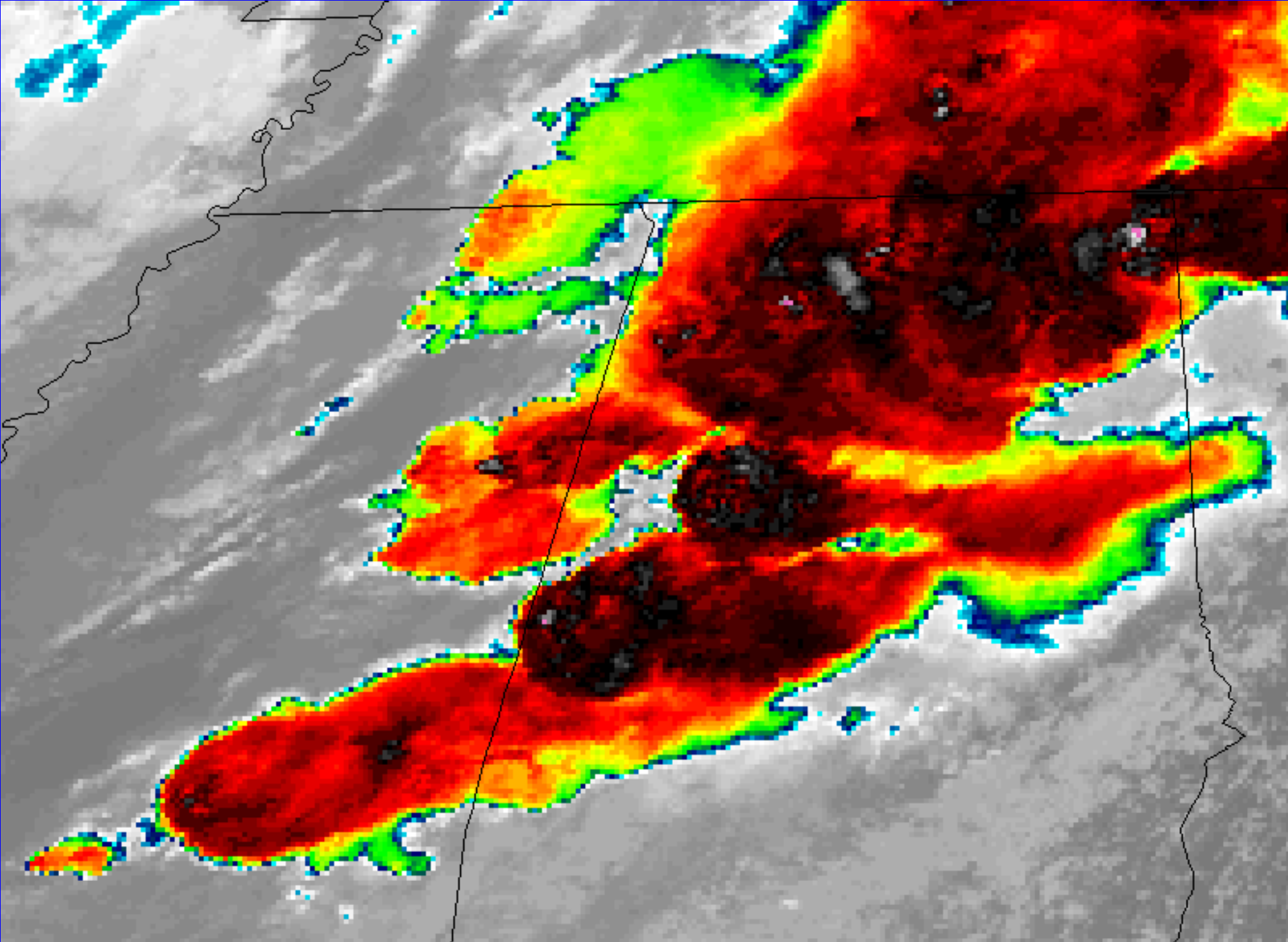
IR B16 13.3 UM





NOAA-15 AVHRR 27 APR 11 21:24UTC BAND=5 (12UM) AT GOES RESOLUTION

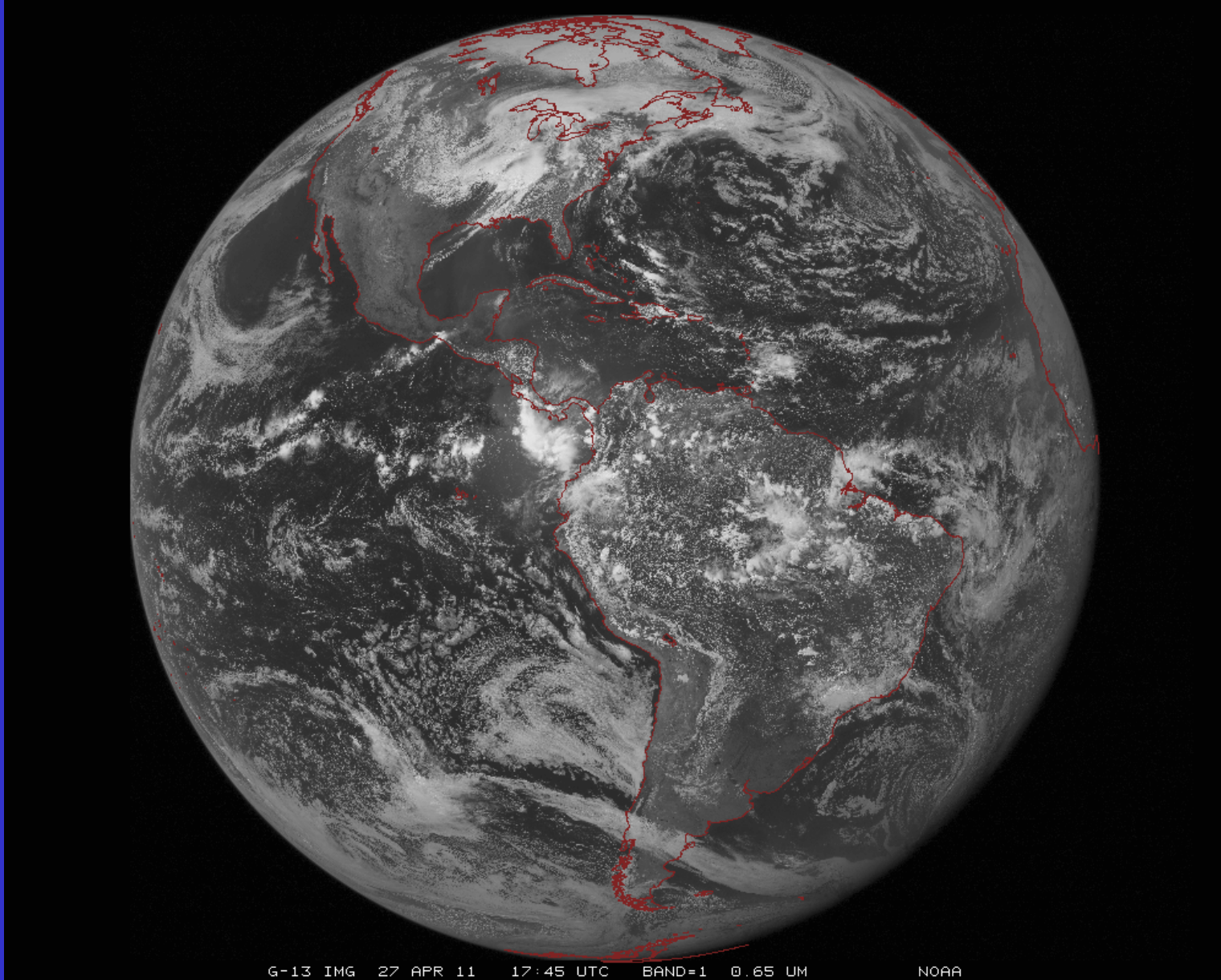
UW/CIMSS



NOAA-15 AVHRR 27 APR 11 21:24UTC BAND=5 (12UM) AT ABI RESOLUTION

UW/CIMSS

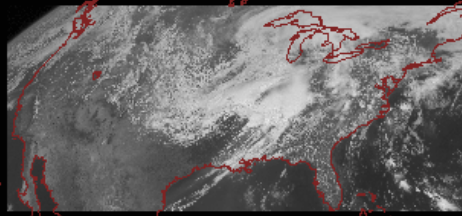




ABI  
scans  
about 5  
times  
faster  
than the  
current  
GOES  
imager

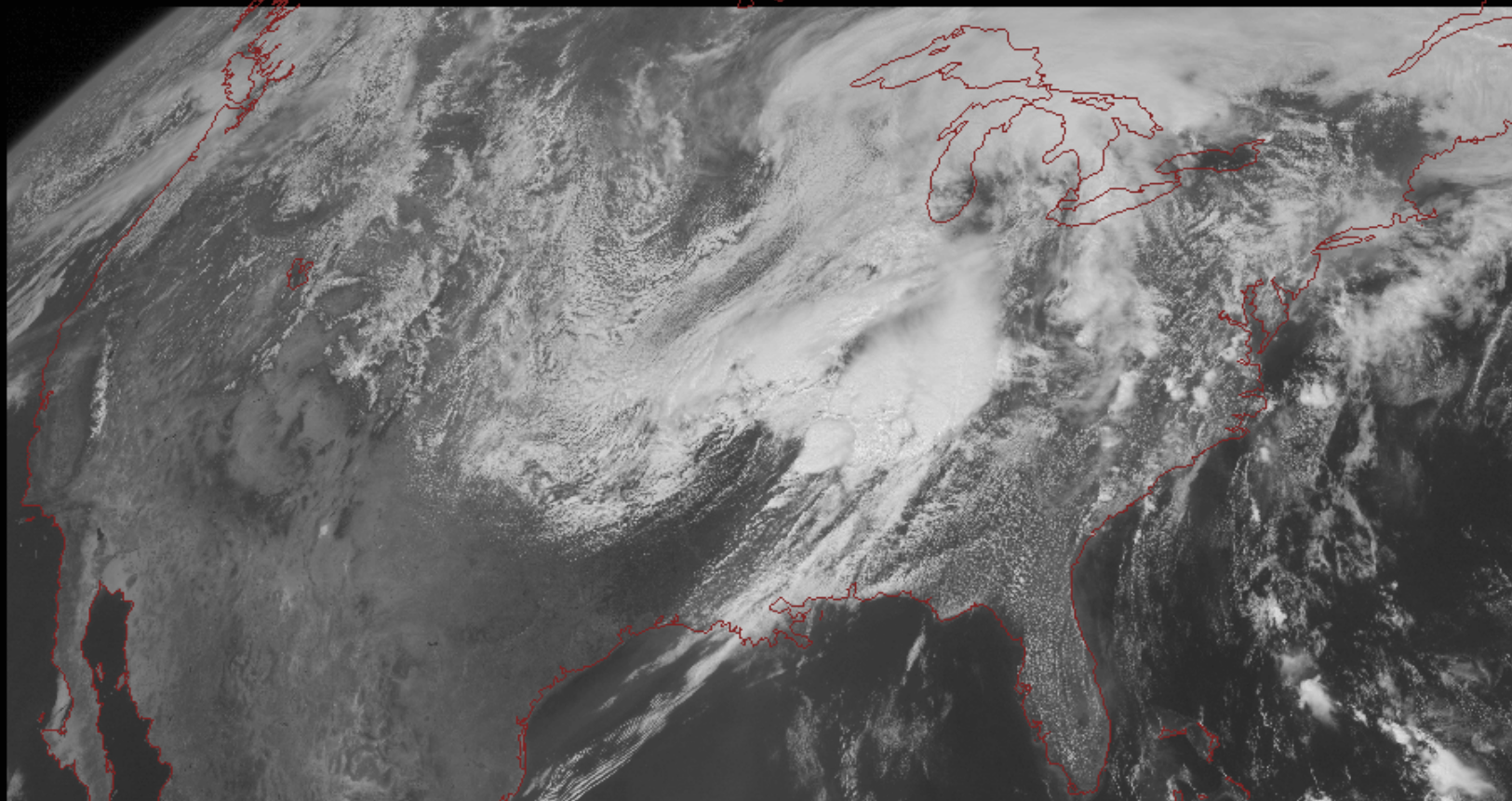
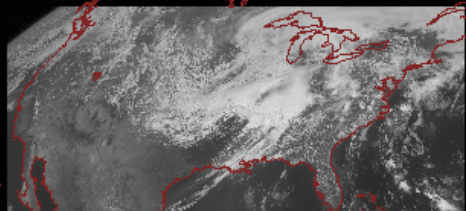
**Anticipated scan mode for the ABI:**

**- Full disk images every 15 minutes + 5 min CONUS images + mesoscale**

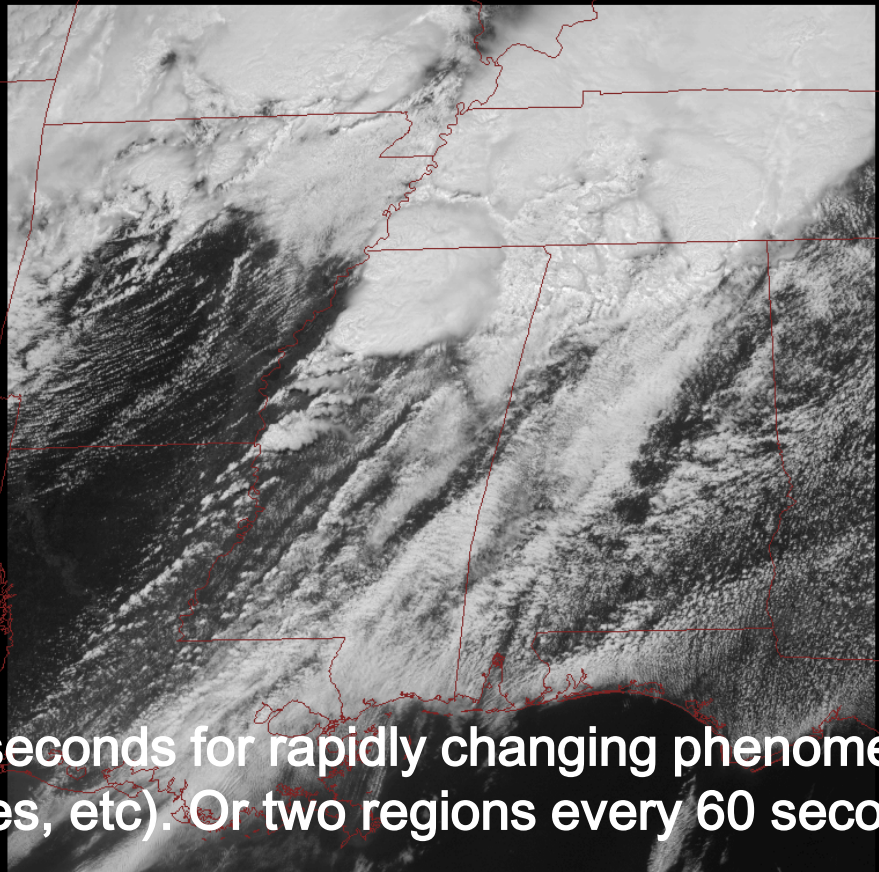


G-13 IMG 27 APR 11 17:45 UTC BAND=1 0.65 UM NOAA

**ABI can offer Continental US images every 5 minutes for routine monitoring of a wide range of events (storms, dust, clouds, fires, winds, etc).  
This is every 15 or 30 minutes with the current GOES in routine mode.**







G-13 IMG 27 APR 11 1

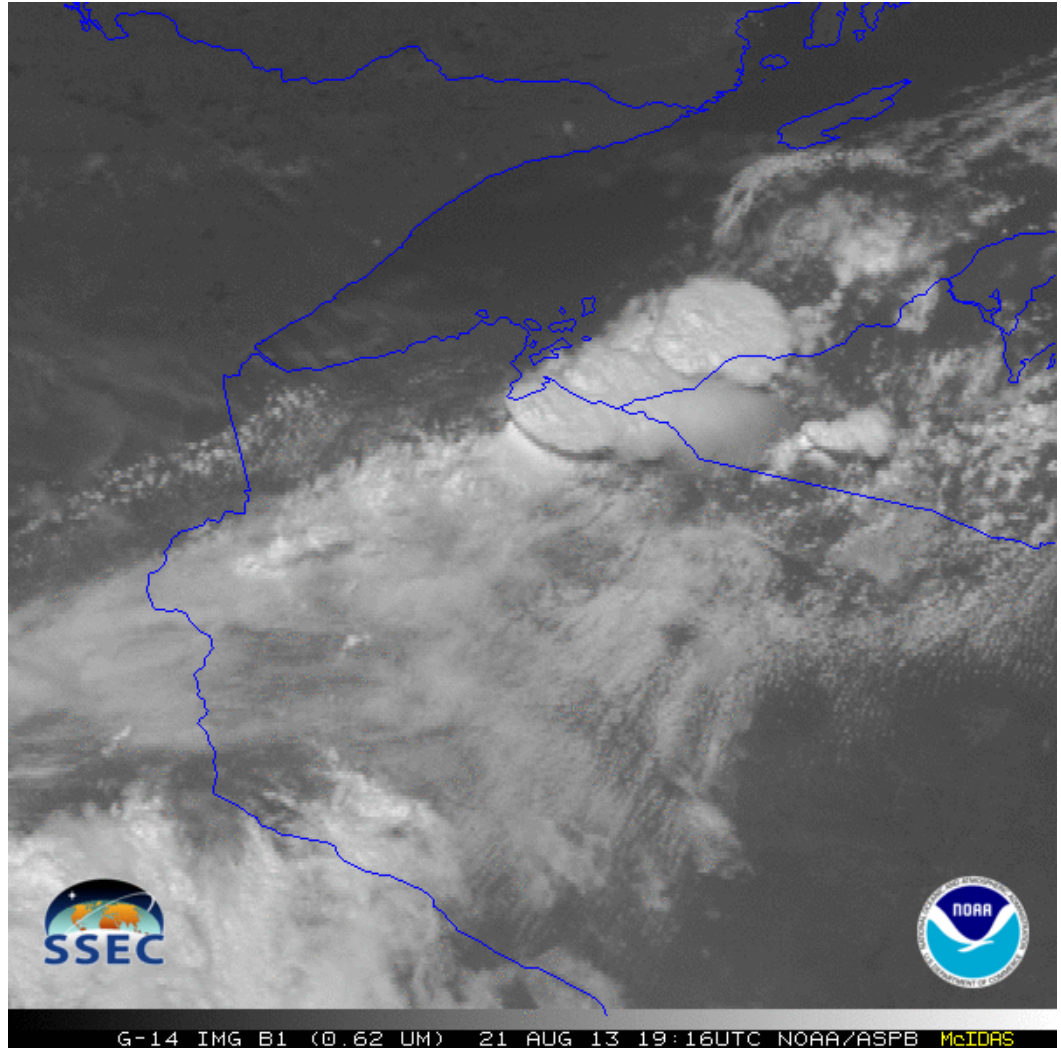
**Mesoscale images every 30 seconds for rapidly changing phenomena (thunderstorms, hurricanes, fires, etc). Or two regions every 60 seconds.**

G-13 IMG 27 APR 11 17:45 UTC BAND=1 0.65 UM NOAA



# GOES-14: Special Rapid Scanning offers glimpse of the ABI

- SRSOR (Super Rapid Scan Operations for GOES-R) from GOES-14 imager
- Data between mid-August and September 24<sup>th</sup> and late October 2012; and two days in June and 12 days in mid-August, 2013.
- [http://cimss.ssec.wisc.edu/goes/srsor/GOES-14\\_SRSOR.html](http://cimss.ssec.wisc.edu/goes/srsor/GOES-14_SRSOR.html) and [http://cimss.ssec.wisc.edu/goes/srsor2013/GOES-14\\_SRSOR.html](http://cimss.ssec.wisc.edu/goes/srsor2013/GOES-14_SRSOR.html)
- Many phenomena were observed: convection, hurricanes, fires, smoke, ...
- Data to many groups HPC, OPC, AWC, SPC, SAB, several regions, etc.



*Animation from GOES-14 Imager visible image at 1-min time resolution.*

**GOES-14 provided very unique information and offers a glimpse into the possibilities that will be provided by the ABI on GOES-R.**

# GOES-14 Imager 1-min imagery (SRSOR)

(Super Rapid Scan Operations for GOES-R)

## SRSOR 2013

GOES-14 Imager supplied sample 1-min imagery. These tests started on 16 August 2012, with GOES-14 located near 105 degrees West, and ended on September 24, 2012 with a **return October 25-31, 2012**.

SRSO for GOES-R Experiment [Plan](#).

### GOES-14-relevant links:

[http://cimss.ssec.wisc.edu/goes/srsor/GOES-14\\_SRSOR.html](http://cimss.ssec.wisc.edu/goes/srsor/GOES-14_SRSOR.html)

SSEC: [All bands at full coverage/resolutions](#) [With roam and zoom. Allows access to past days.]

SSEC Data Center kml files of Imager: [bands 1 and 4](#)

CIMSS [Satellite Blog](#)

CIRA loop of the [visible](#) and [infrared window](#) [Note that the number at the end of the URL can be changed to show a different number of images.]

NSSL loop of the [visible](#) and [infrared window](#)

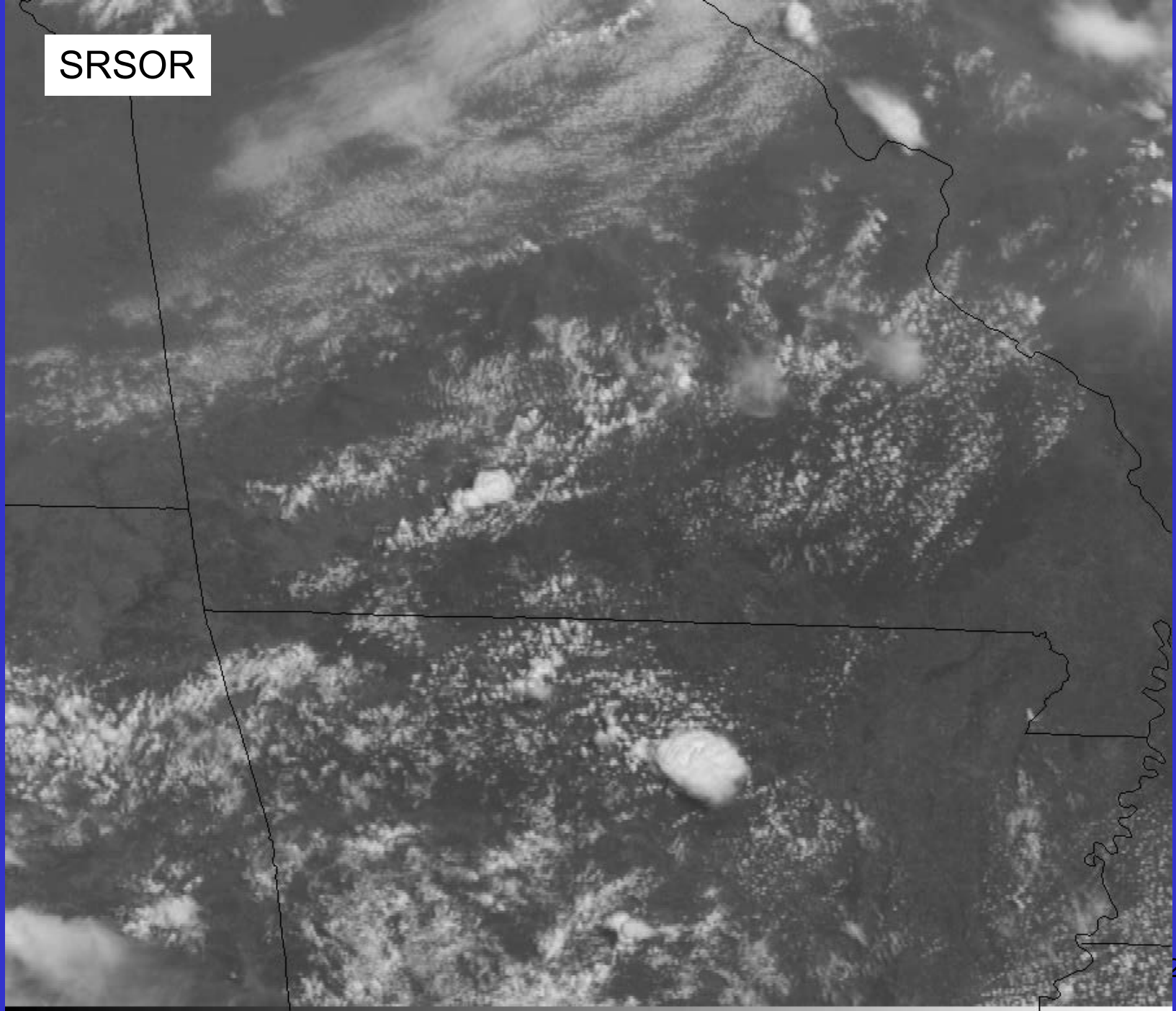
### GOES-14 Schedules

The [SRSOR schedule](#) allows for 26 1-min images most 30 minute periods. Other [GOES schedules](#).

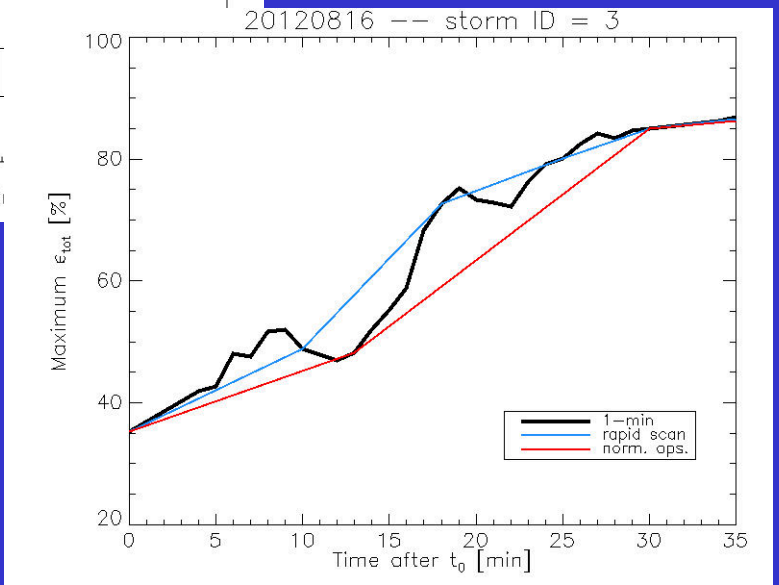
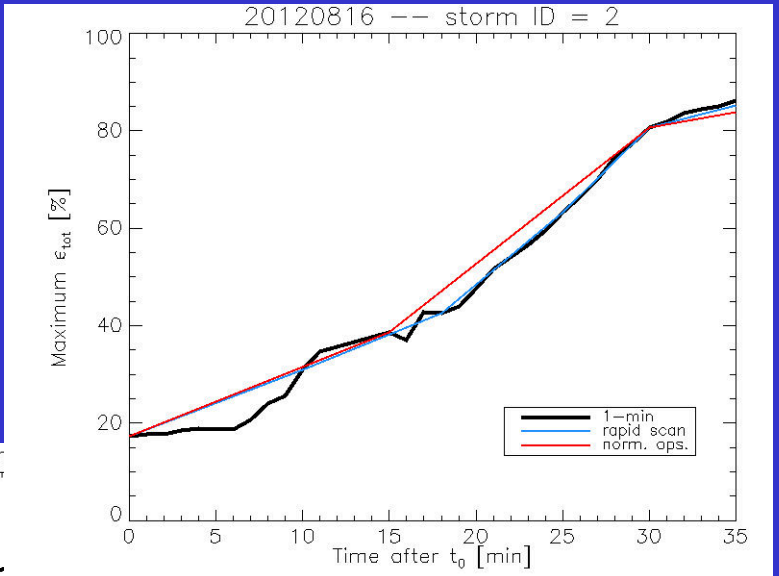
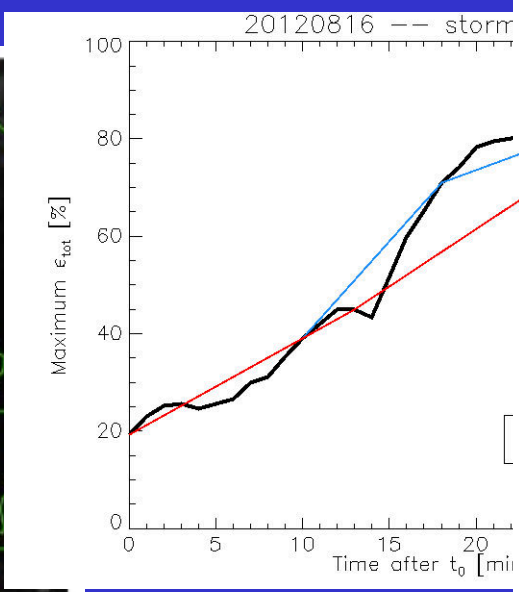
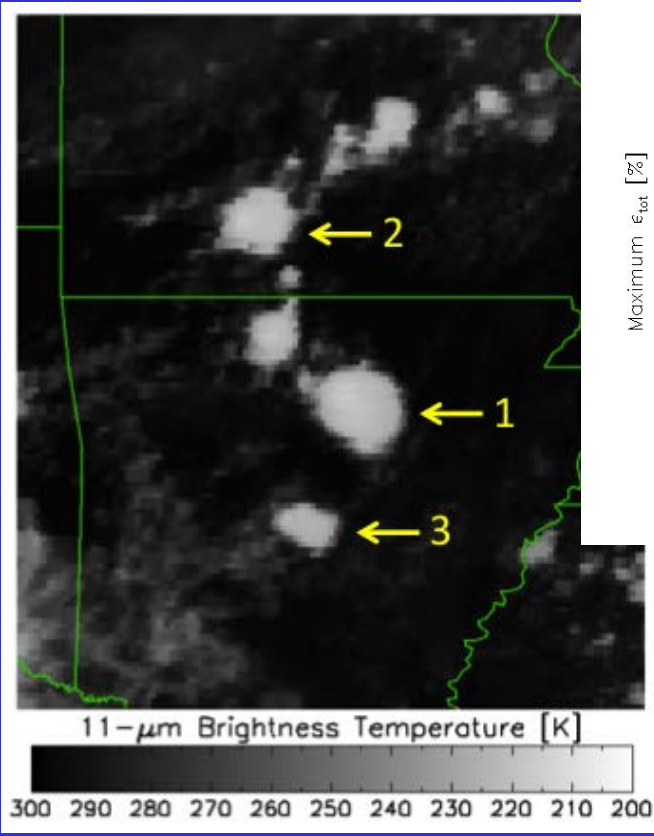
### Daily Implementation of GOES-14 SRSOR Schedules

Starting Date [Julian Day] (Day of Week)	Test Schedule Name	Duration	Center Point (coverage)	Comments	Links (large files)
October 25-31, 2012	SRSOR	299/ 17:45 UTC - 305/ 15:55 UTC	Various	Fast animation of Sandy	<b>6-Days (25-31):</b> 1-min: <a href="#">Youtube</a> , <a href="#">mp4 (128 MB)</a> 1.5-min: <a href="#">mp4 (128 MB)</a> 2-min: <a href="#">mp4 (128 MB)</a>
October 31 [305] (Wednesday)	SRSOR	305/ 11:14:30 UTC - 305/ 22:44:30 UTC	<a href="#">41N 78W</a>	Sandy	<b>6-Days (25-31):</b> <a href="#">Youtube</a> , <a href="#">QuickTime (483 MB)</a>
October 30 [304] (Tuesday)	SRSOR	304/ 11:14:30 UTC - 305/ 11:14:30 UTC	<a href="#">41N 76W</a>	Sandy	<b>AM:</b> <a href="#">Youtube</a> , <a href="#">QuickTime</a> <b>14-19 UTC:</b> <a href="#">Youtube</a> , <a href="#">QuickTime</a>
October 29 [303] (Monday)	SRSOR	303/ 11:14:30 UTC - 304/ 11:14:30 UTC	<a href="#">38.5N 73W</a>	Sandy (landfall)	<b>AM:</b> <a href="#">Youtube</a> , <a href="#">QuickTime</a> <b>11-17 UTC:</b> <a href="#">Youtube</a> , <a href="#">QuickTime</a> <b>Landfall (VIS+IR):</b> <a href="#">Youtube</a> , <a href="#">QuickTime</a> <b>Entire day (daylight):</b> <a href="#">Youtube</a> , <a href="#">QuickTime</a>

SRSOR



# Rate of temporal cooling in the longwave infrared band





## GOES-14 Imager 2013 1-min imagery (SRSOR)

(Super Rapid Scan Operations for GOES-R)

GOES-14 Imager provided special 1-min data June 12th to the 14th, 2013. Also, GOES-14 supplied 1-min imagery 13-28 August, 2013. These were to support Global Hawk flights (or other targets of opportunity, similar to the SRSOR experiment in 2012). Dry run days were conducted August 13-16. GOES-14 was located near 105 degrees West. GOES-14 returned to 'storage mode' on August 29, 2013.

### GOES-14-relevant SRSOR links:

SSEC: [All bands at full coverage/resolutions](#) [With roam and zoom. Allows access to past days.]

SSEC Data Center kml files of Imager: [bands 1 and 4](#)

CIMSS [Satellite Blog](#) [http://cimss.ssec.wisc.edu/goes/srsor2013/GOES-14\\_SRSOR.html](http://cimss.ssec.wisc.edu/goes/srsor2013/GOES-14_SRSOR.html)

CIRA loop of the [visible](#) and [infrared window](#) and [water vapor](#) [Note that the number at the end of the URL can be changed to show a different number of images.]

NSSL loop of the [visible](#) and [infrared window](#)

GOES SRSOR loop plus **Roof Top Camera images** SSEC data center [visible only](#) [Allows access to past days, only some days have SRSOR over Madison, WI]

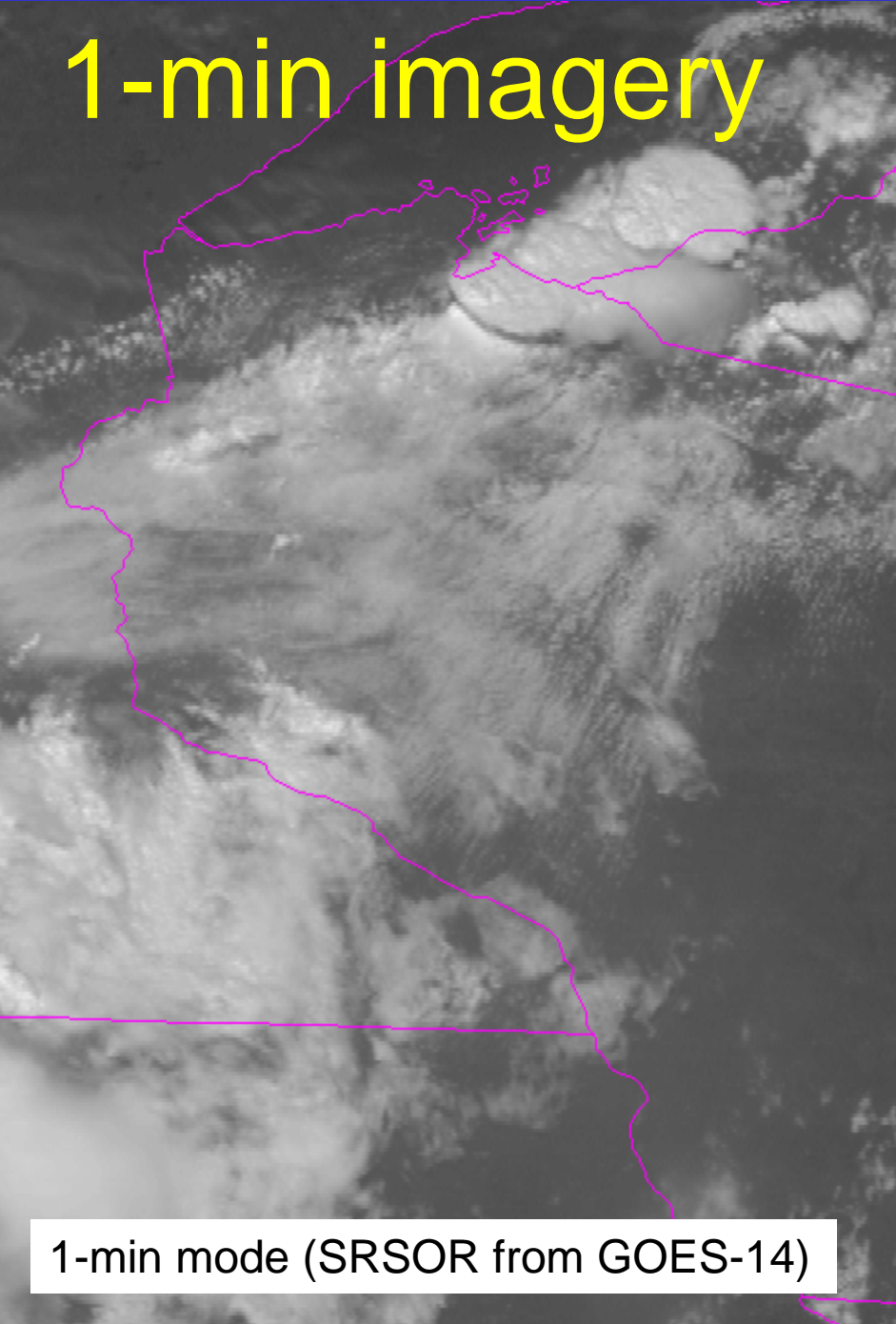
### GOES-14 SRSOR

SRSOR information from [2012](#). The [SRSOR schedule](#) allows for 26 1-min images most 30 minute periods. Other [GOES schedules](#).

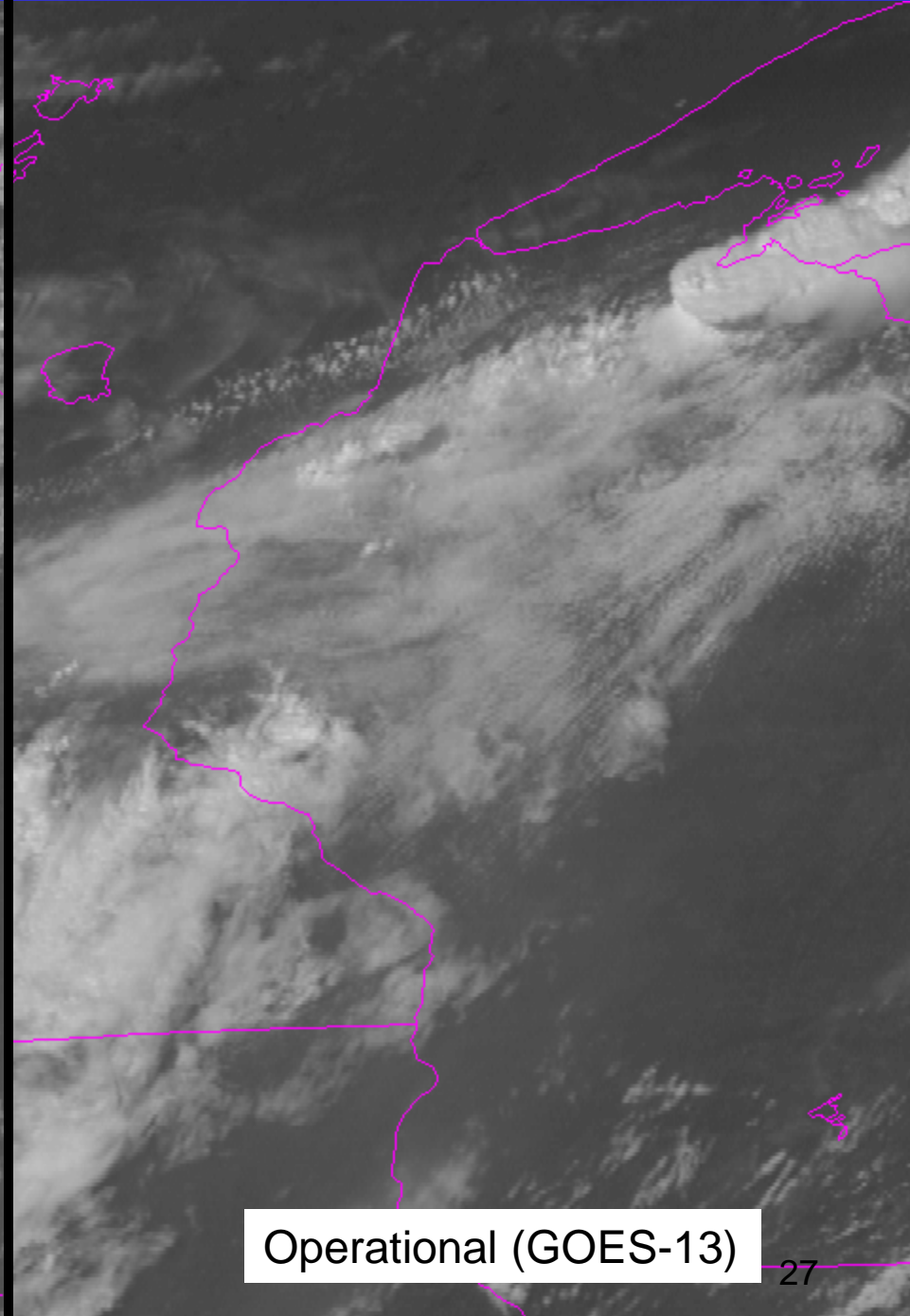
#### Daily Implementation of GOES-14 SRSOR Schedules

Starting Date [Julian Day] (Day of Week)	Test Schedule Name	Duration	Center Point (coverage)	Comments	Links (large files)
June 12 [163] (Wednesday)	SRSOR	163/ 16:14:30 UTC - 164/ 11:44:30 UTC	<a href="#">37N 85W</a>	Moderate Risk over IL, IN, OH	<a href="#">IL</a> <a href="#">IL (HD)</a> <a href="#">MidWest (YouTube)</a> <a href="#">GA</a> <a href="#">GA (HD)</a> <a href="#">Blog: IL</a>
June 13 [164] (Thursday)	SRSOR	164/ 11:44:30 UTC - 165/ 12:14:30 UTC	<a href="#">36N 84W</a>	Moderate Risk over MD, DE, etc.	<a href="#">KY</a> <a href="#">VA</a> <a href="#">MidAtlantic (YouTube)</a> <a href="#">Blog: Eastern US</a> <a href="#">MidAtlantic (YouTube)</a> <a href="#">SRSOR+DCLMA</a>
August 13 [225] (Tuesday)	SRSOR (no FD)	225/ 11:14:30 UTC - 226/ 11:14:00 UTC	<a href="#">39N 115W</a>	Pacific NW fires, etc.	<a href="#">Blog: ID</a> <a href="#">pyroCB over Idaho</a> <a href="#">GOES-14 vs GOES-15 over Montana</a>
August 14 [226] (Wednesday)	SRSOR (no FD)	226/ 11:14:30 UTC - 227/ 11:14:00 UTC	<a href="#">37N 85W</a>	SE. GOES-14 E/W maneuver approx. 1220-1230 UTC	<a href="#">Fog in WV</a> <a href="#">GOES-14 Fog in WI</a> <a href="#">SRSOR + Roof Top Cameras over Madison, WI</a>
August 15 [227] (Thursday)	SRSOR (no FD)	227/ 11:14:30 UTC - 228/ 11:14:00 UTC	<a href="#">32N 85W</a>	Global Hawk ferry flight + Gulf of Mexico Convection	<a href="#">Blog: Convection in the SE US</a> <a href="#">SRSOR + Flight Tracks over ATL (from Aviation Wx Testbed)</a>
August 19 [231] (Monday)	SRSOR (No FD)	231/ 11:14:30 UTC - 232/ 11:14:00 UTC	<a href="#">39N 115W</a>	West Coast, NW Fires, etc.	<a href="#">MT Fires</a> <a href="#">Rim Fire Complex in CA</a> <a href="#">Mesoscale Convective Vortex over Nevada</a>
August 20 [232] (Tuesday)	SRSOR (No FD)	232/ 11:14:30 UTC - 233/ 11:14:00 UTC	<a href="#">37N 84W</a>	US SE, GH take-off, AWC support, etc.	<a href="#">GOES-14 SRSOR + Roof Top Cameras</a> <a href="#">Fog over Pennsylvania and New York</a>
August 21 [233] (Wednesday)	SRSOR (No FD)	233/ 11:14:30 UTC - 234/ 11:14:00 UTC	<a href="#">39N 93W</a>	Slight Risk over MN	<a href="#">early morning over WI</a> <a href="#">SRSOR+RTC</a> <a href="#">Convection over IA</a> <a href="#">Late afternoon over WI</a> <a href="#">Blog: Convection over Midwest</a> <a href="#">animated gif</a> <a href="#">HD mp4</a> <a href="#">GOES-13 vs -14</a> <a href="#">SRSOR + Flight Tracks over the Midwest</a>
August 22 [234] (Thursday)	SRSOR (No FD)	234/ 11:14:30 UTC - 235/ 11:14:00 UTC	<a href="#">39N 115W</a>	Western US, Fires, etc.	<a href="#">Blog: Fire Rim in CA</a> <a href="#">Visible loop</a>
August 23 [235] (Friday)	SRSOR (No FD)	235/ 11:14:30 UTC - 236/ 11:14:00 UTC	<a href="#">35N 91W</a>	SEAC4RS field exp	<a href="#">Isolated convection in the Gulf of Mexico</a>
August 24 [236] (Saturday)	SRSOR (No FD)	236/ 11:14:30 UTC - 237/ 11:14:00 UTC	<a href="#">39N 98W</a>	Northern Plains, slight risk	-
August 25 [237] (Sunday)	SRSOR (No FD)	237/ 11:14:30 UTC - 238/ 11:14:00 UTC	<a href="#">37N 113W</a>	Monsoon convection over SW	-
August 26 [238] (Monday)	SRSOR (No FD)	238/ 11:14:30 UTC - 239/ 11:14:00 UTC	<a href="#">40N 96W</a>	Convection over Upper Midwest	<a href="#">Convection over WI</a> <a href="#">animated gif</a> <a href="#">SRSOR + RTC</a> <a href="#">Blog: Bore Feature over WI</a>
August 27 [239] (Tuesday)	SRSOR (No FD)	239/ 11:14:30 UTC - 240/ 11:14:00 UTC	<a href="#">39N 115W</a>	West Coast: Monsoon, SEAC4RS flights, etc.	<a href="#">CA Rim Fire</a>
August 28 [240] (Wednesday)	Optimized schedule tests	240/ 11:14:30 UTC - 240/ 14:14:00 UTC	39N 115W	Optimized Super Rapid Scan	-
August 28 [240] (Wednesday)	Optimized schedule tests	240/ 14:14:30 UTC - 241/ 17:00:00 UTC	N/A	Optimized Rapid Scan	-

# 1-min imagery



1-min mode (SRSOR from GOES-14)



Operational (GOES-13)



# SRSOR (2013)

1500 UTC

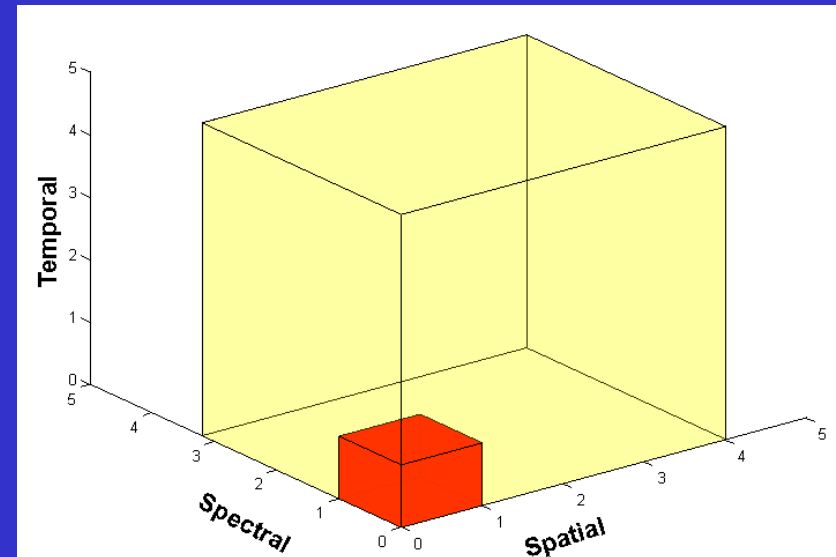


G-14 IMG B1 (0.62 UM) 22 AUG 13 15:00UTC NOAA/ASPB

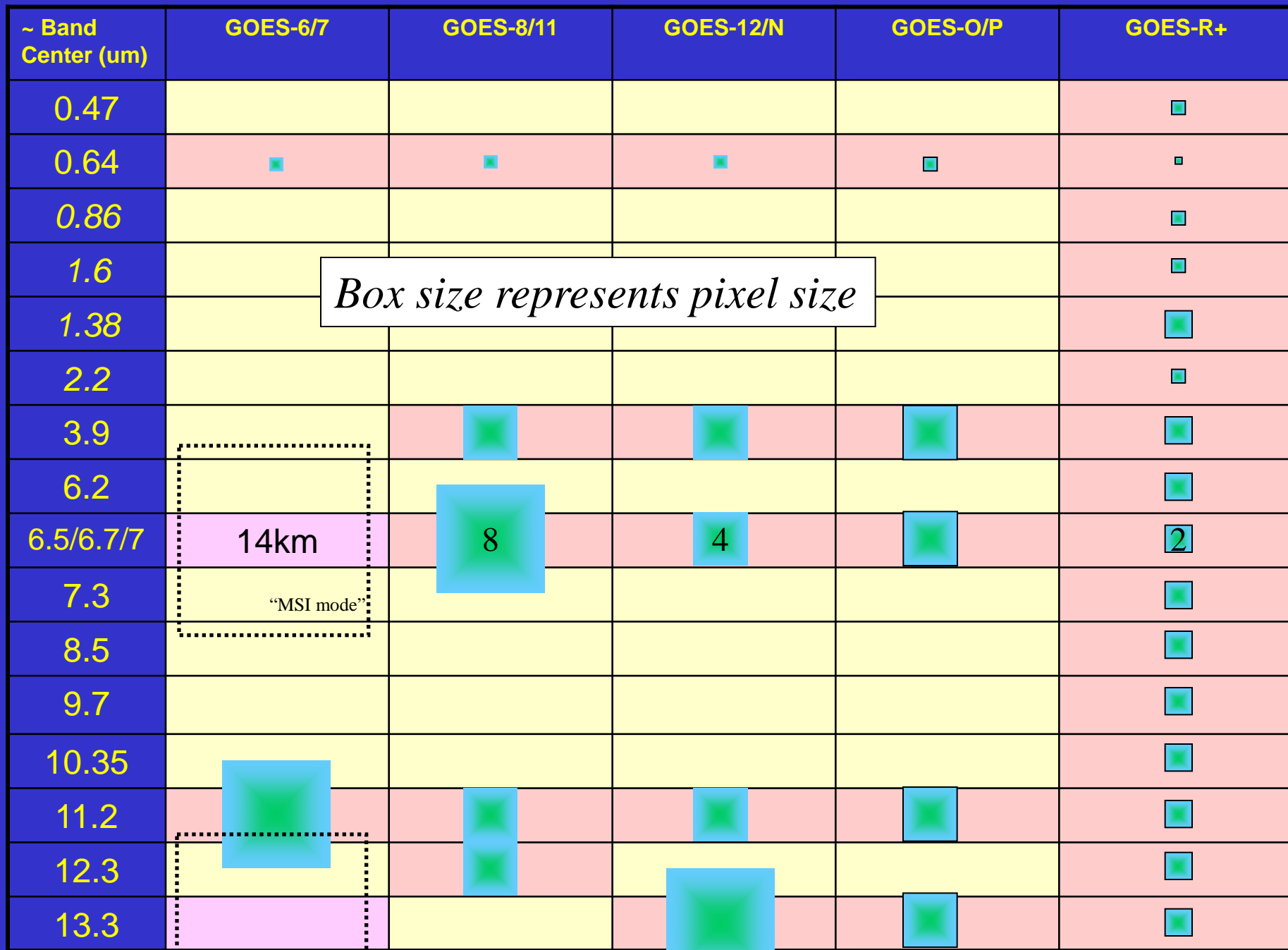
MeIDAS

# Outline

- ABI (Advanced Baseline Imager)
  - Spectral
  - Spatial
  - Temporal
  
- Summary
  - More information
  - Questions



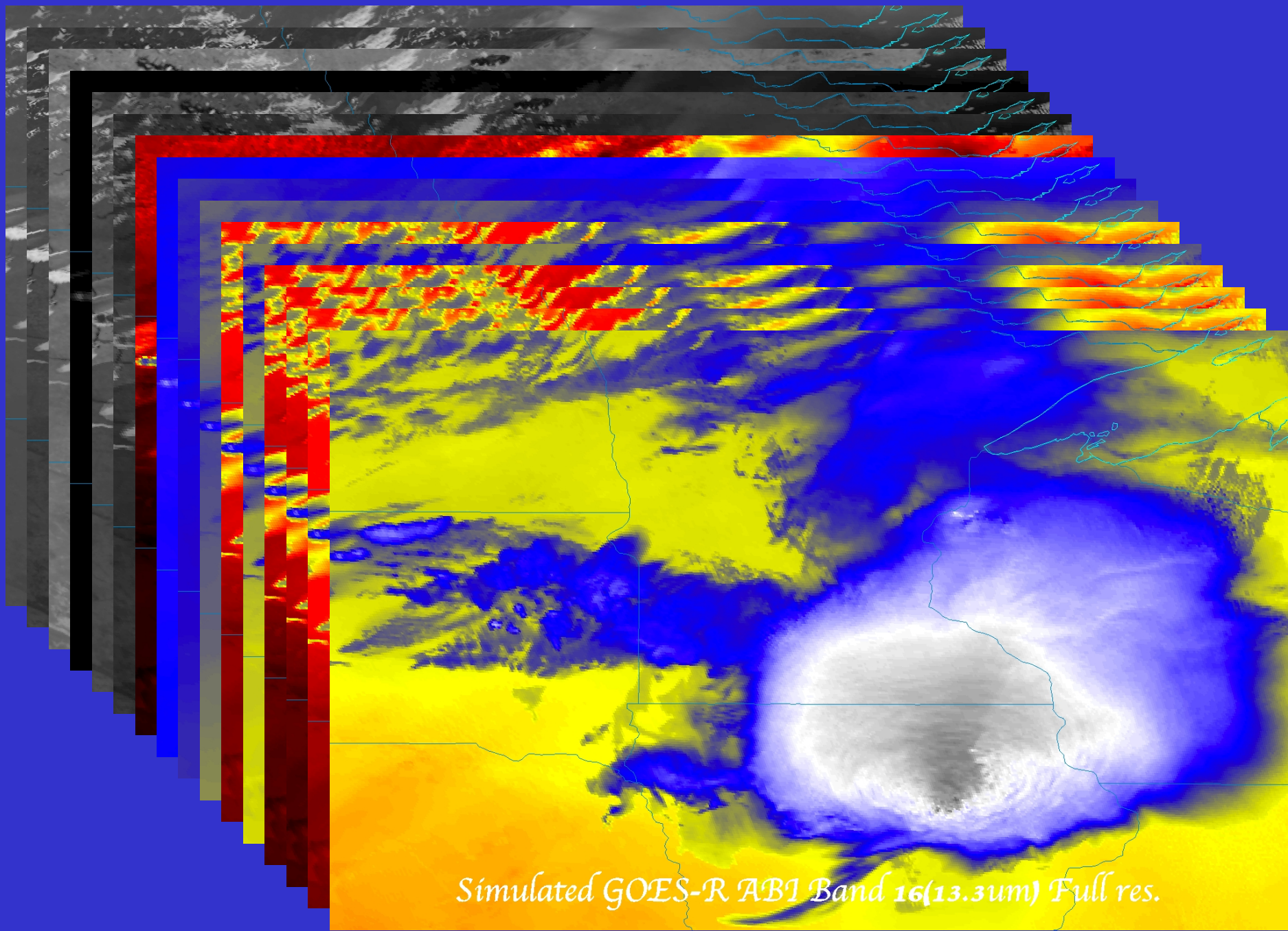
# Approximate spectral and spatial resolutions of US GOES Imagers



# Summary

1. The GOES-R ABI provides mission continuity
2. Two times the image navigation quality
3. Three times the number of imaging bands
4. Four times the spatial resolutions
5. Five times the coverage rate
  - Special GOES-14 1-min data pathfinder





*Simulated GOES-R ABI Band 16(13.3um) Full res.*





# GOES-R ABI Products



## Baseline Products

### Advanced Baseline Imager (ABI)

- Aerosol Detection (Including Smoke and Dust)
- Aerosol Optical Depth (AOD)
- Clear Sky Masks
- Cloud and Moisture Imagery
- Cloud Optical Depth
- Cloud Particle Size Distribution
- Cloud Top Height
- Cloud Top Phase
- Cloud Top Pressure
- Cloud Top Temperature
- Derived Motion Winds
- Derived Stability Indices
- Downward Shortwave Radiation: Surface
- Fire/Hot Spot Characterization
- Hurricane Intensity Estimation
- Land Surface Temperature (Skin)
- Legacy Vertical Moisture Profile
- Legacy Vertical Temperature Profile
- Radiances
- Rainfall Rate/QPE
- Reflected Shortwave Radiation: TOA
- Sea Surface Temperature (Skin)
- Snow Cover
- Total Precipitable Water
- Volcanic Ash: Detection and Height

## Future Capabilities

### Advanced Baseline Imager (ABI)

- Absorbed Shortwave Radiation: Surface
- Aerosol Particle Size
- Aircraft Icing Threat
- Cloud Ice Water Path
- Cloud Layers/Heights
- Cloud Liquid Water
- Cloud Type
- Convective Initiation
- Currents
- Currents: Offshore
- Downward Longwave Radiation: Surface
- Enhanced "V"/Overshooting Top Detection
- Flood/Standing Water
- Ice Cover
- Low Cloud and Fog
- Ozone Total
- Probability of Rainfall
- Rainfall Potential
- Sea and Lake Ice: Age
- Sea and Lake Ice: Concentration
- Sea and Lake Ice: Motion
- Snow Depth (Over Plains)
- SO<sub>2</sub> Detection
- Surface Albedo
- Surface Emissivity
- Tropopause Folding Turbulence Prediction
- Upward Longwave Radiation: Surface
- Upward Longwave Radiation: TOA
- Vegetation Fraction: Green
- Vegetation Index
- Visibility

# More information

## GOES-R:

- <http://www.goes-r.gov>
- <http://www.meted.ucar.edu/index.htm>

## UW/SSEC/CIMSS/ASPB:

- [http://cimss.ssec.wisc.edu/goes\\_r/proving-ground.html](http://cimss.ssec.wisc.edu/goes_r/proving-ground.html)
- (ABI WES guide with simulated images)
- [http://cimss.ssec.wisc.edu/goes\\_r/proving-ground/nssl\\_abi/nssl\\_abi\\_rt.html](http://cimss.ssec.wisc.edu/goes_r/proving-ground/nssl_abi/nssl_abi_rt.html)
- [http://cimss.ssec.wisc.edu/goes\\_r/proving-ground/wrf\\_chem\\_abi/wrf\\_chem\\_abi.html](http://cimss.ssec.wisc.edu/goes_r/proving-ground/wrf_chem_abi/wrf_chem_abi.html)
- <http://cimss.ssec.wisc.edu/goes/abi/>
- <http://cimss.ssec.wisc.edu/goes/blog/>
- [http://cimss.ssec.wisc.edu/goes/srsor/GOES-14\\_SRSOR.html](http://cimss.ssec.wisc.edu/goes/srsor/GOES-14_SRSOR.html)
- [http://cimss.ssec.wisc.edu/goes/srsor2013/GOES-14\\_SRSOR.html](http://cimss.ssec.wisc.edu/goes/srsor2013/GOES-14_SRSOR.html)



AMS BAMS Article on the ABI



# GOES + RTC (Roof Top Cameras)

Timothy J. Schmit (tim.j.schmit@noaa.gov)

NOAA/NESDIS/Satellite Applications and Research

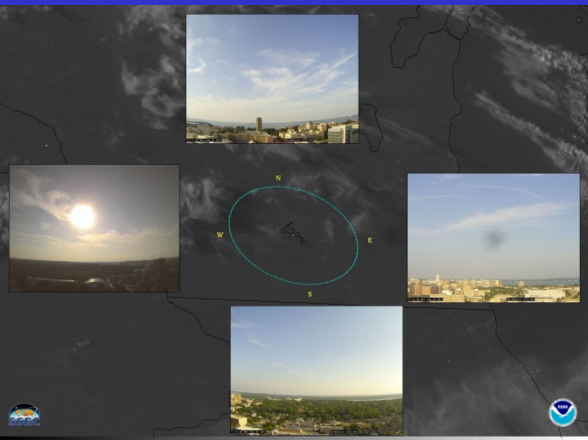
Advanced Satellite Products Branch (ASPB)

Madison, WI

Philipp Ratz, Bill Bellon, W. Paul Menzel

CIMSS

*MUG Meeting  
Madison, WI  
September 9-10, 2013*



# GOES-14 SRSOR + RTC

<http://cimss.ssec.wisc.edu/goes/rtc>

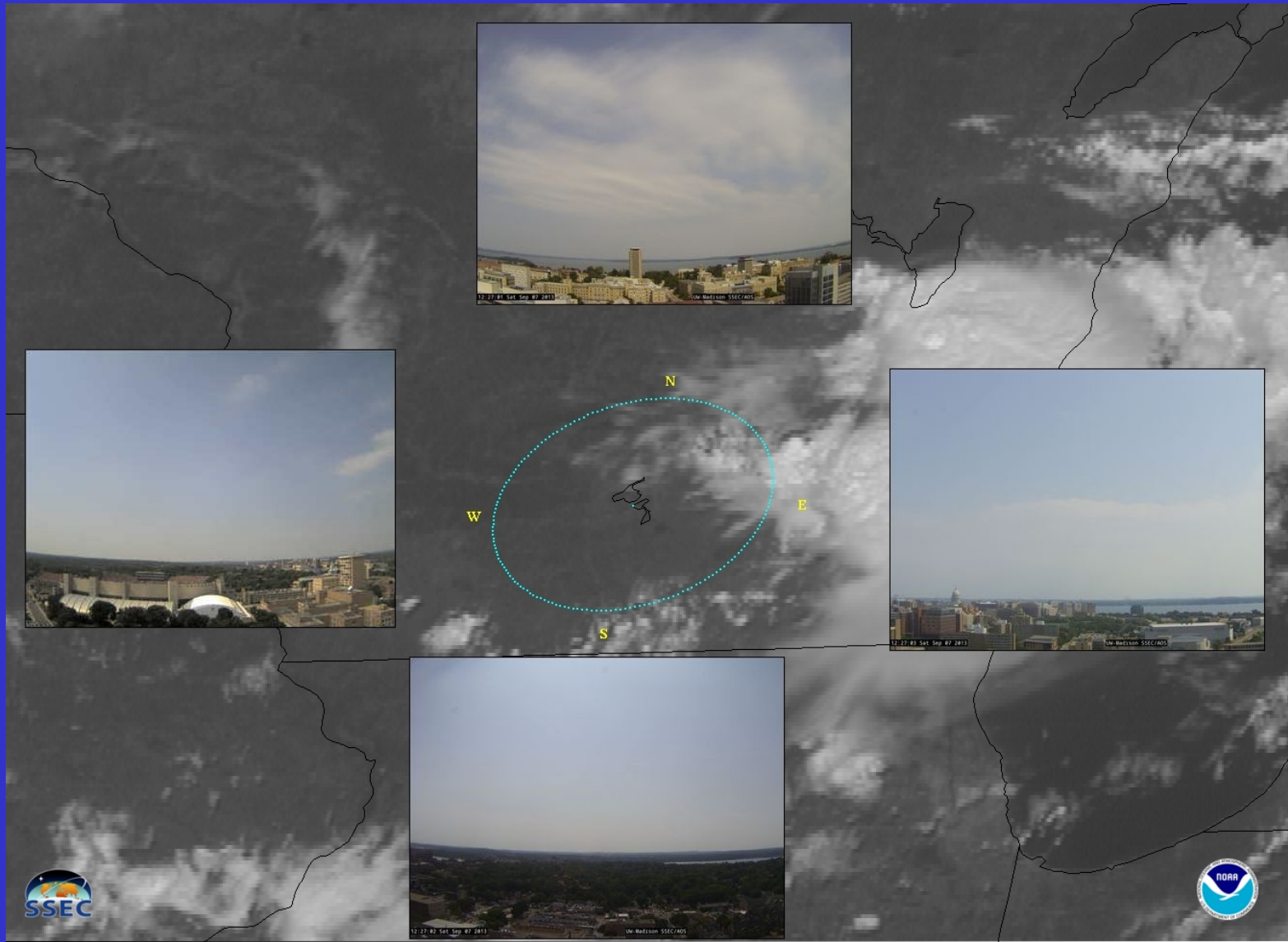


The 1-min interval imagery shows 'what is happening', not 'what has happened'.

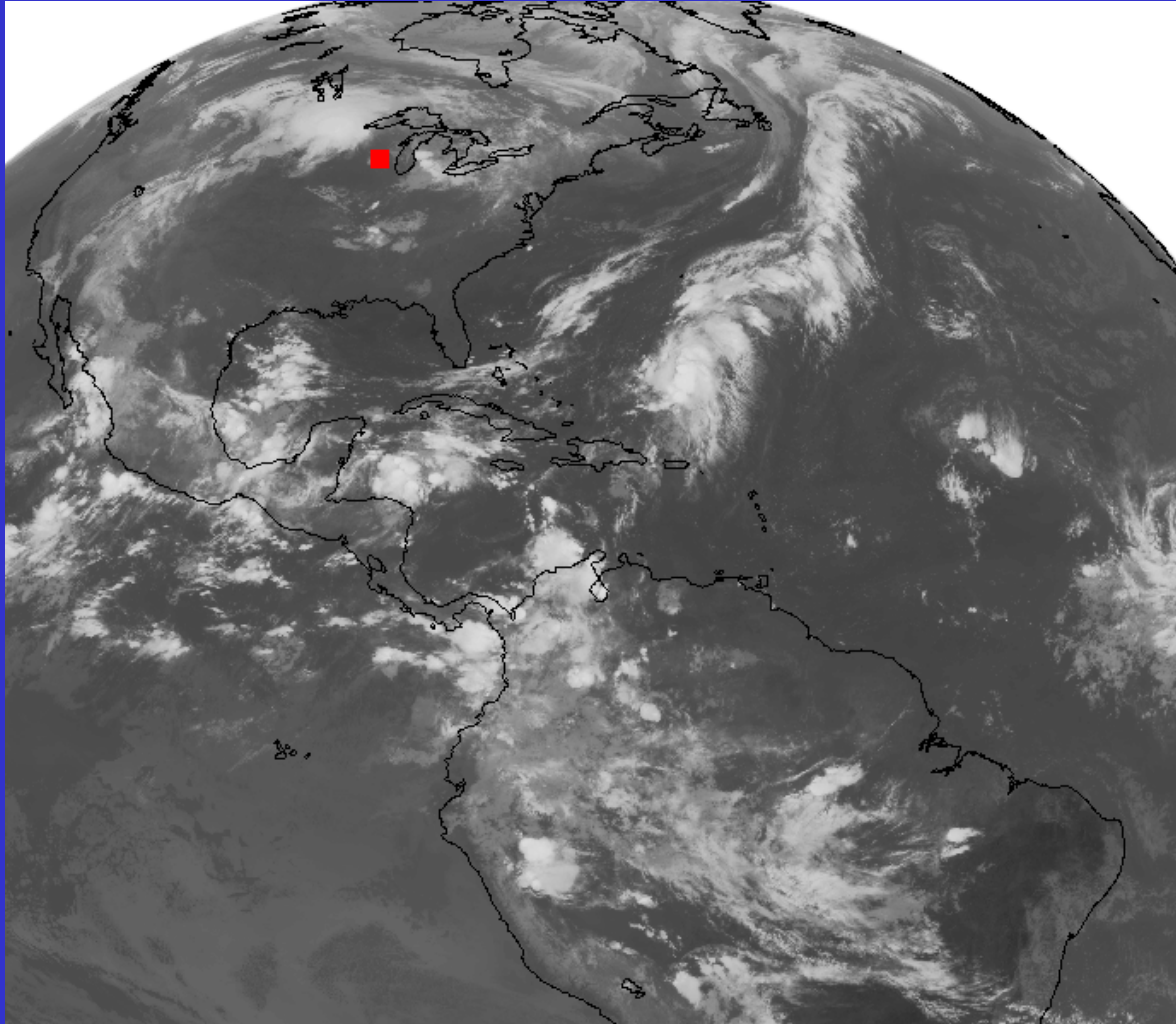


# GOES-13 SRSOR + RTC

[http://cimss.ssec.wisc.edu/goes/rtc\\_goes\\_east/](http://cimss.ssec.wisc.edu/goes/rtc_goes_east/)



# National/International examples?



**You build a page with GOES and RTC and I'll link to it...**